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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,144	12/18/2001	Yongsik Moon	AMAT/5803/CMP/CMP/RKK	5051

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APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

SMOOT, STEPHEN W

ART UNIT PAPER NUMBER

2813

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,144

Applicant(s)

MOON ET AL.

Examiner

Stephen W. Smoot

Art Unit

2813

NW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-28, 30-32 and 35-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2, 7-28, 30-32, 35, 37, 39, 40, 42 and 44 is/are allowed.
- 6) ☒ Claim(s) 3-5, 38 and 43 is/are rejected.
- 7) ☒ Claim(s) 36 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This Office action is in response to applicant's RCE filed on 28 October 2003.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's amendment and IDS filed on 28 October 2003 have been entered.

Claim Objections

2. Claims 3, 36, 41 are objected to because of the following informalities:

In claim 3, line 2, delete "between" because a lower limit for the retaining ring contact pressure is not claimed;

In claim 36, line 2, delete "between" because a lower limit for the retaining ring contact pressure is not claimed; and

In claim 41, line 2, delete "between" because a lower limit for the retaining ring contact pressure is not claimed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-5, 38, 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the

remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance:

Claim 3 recites the broad recitation “the membrane pressure is about 5 psi or less” (see claim 3, line 2), and the claim also recites “the membrane pressure is about 2 psi or less” (see claim 1, lines 8-9), which is the narrower statement of the range;

Claim 4 recites the broad recitation “the ratio of retaining ring contact pressure to membrane pressure is greater than about 1.1:1” (see claim 4, lines 1-2), and the claim also recites “the membrane pressure is about 2 psi or less” (see claim 1, lines 8-9) combined with “the retaining ring contact pressure is between about 0.4 psi and about 7.5 psi greater than a membrane pressure” (see claim 2, lines 1-2), which is the narrower statement of the range because the smallest ratio implied by these combined limitations cannot be less than 1.2:1 (i.e. when the membrane pressure is 2 psi, the retaining ring contact pressure must be at least 2.4 psi);

Claim 5 recites the broad recitation “the membrane pressure is about 5 psi or less” (see claim 5, lines 3-4), and the claim also recites “the membrane pressure is about 2 psi or less” (see claim 1, lines 8-9), which is the narrower statement of the range;

Claim 5 recites the broad recitation “the ratio of retaining ring contact pressure to membrane pressure is greater than about 1.1:1” (see claim 5, lines 4-5), and the claim

also recites “the membrane pressure is about 2 psi or less” (see claim 1, lines 8-9) combined with “the retaining ring contact pressure is between about 0.4 psi and about 7.5 psi greater than a membrane pressure” (see claim 2, lines 1-2), which is the narrower statement of the range because the smallest ratio implied by these combined limitations cannot be less than 1.2:1 (i.e. when the membrane pressure is 2 psi, the retaining ring contact pressure must be at least 2.4 psi);

Claim 38 recites the broad recitation “the ratio of retaining ring contact pressure to membrane pressure is greater than about 1.1:1” (see claim 38, lines 4-5), and the claim also recites “the membrane pressure is about 5 psi or less” (see claim 38, line 4) combined with “the retaining ring contact pressure is between about 2 psi and about 7.5 psi greater than a membrane pressure” (see claim 38, lines 1-2), which is the narrower statement of the range because the smallest ratio implied by these combined limitations cannot be less than 1.4:1 (i.e. when the membrane pressure is 5 psi, the retaining ring contact pressure must be at least 7 psi); and

Claim 43 recites the broad recitation “the ratio of retaining ring contact pressure to membrane pressure is greater than about 1.1:1” (see claim 43, lines 4-5), and the claim also recites “the membrane pressure is about 5 psi or less” (see claim 43, line 4) combined with “the retaining ring contact pressure is between about 2 psi and about 7.5 psi greater than a membrane pressure” (see claim 43, lines 1-3), which is the narrower statement of the range because the smallest ratio implied by these combined limitations cannot be less than 1.4:1 (i.e. when the membrane pressure is 5 psi, the retaining ring contact pressure must be at least 7 psi).

Allowable Subject Matter

5. Claims 1-2, 7-28, 30-32, 35, 37, 39-40, 42, 44 are allowed.
6. Claims 36, 41 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.
7. The following is a statement of reasons for the indication of allowable subject matter:
 - Claims 1-2, 7, 12-14 are allowed because the prior art of record does not teach or suggest a method of polishing a substrate having a conductive material formed thereon that includes a ratio of retaining ring contact pressure to membrane pressure of more than 1.1:1, wherein the membrane pressure is about 2 psi or less, combined with a ratio of carrier head rotational speed to platen rotational speed that ranges from 2:1 to 12:1, and in combination with the other claim limitations;
 - Claim 8, 35, 37, 39 are allowed and claim 36 would be allowable because the prior art of record does not teach or suggest a method of polishing a substrate having a conductive material formed thereon that includes the step of accelerating the platen rotational speed and the carrier head rotational speed at

a rate that ranges from 5 to 30 rpms per second, in combination with the other claim limitations;

- Claims 9-11, 21-28, 30-32, 40, 42, 44 are allowed and claim 41 would be allowable because the prior art of record does not teach or suggest a method of polishing a substrate having a conductive material formed thereon that includes a retaining ring contact pressure that has a ratio of retaining ring contact pressure to membrane pressure of more than 1.1:1, combined with a second polishing pressure that is less than a first polishing pressure and a second platen rotational speed that is less than a first platen rotational speed, and in combination with the other claim limitations; and
- Claims 15-20 are allowed because the prior art of record does not teach or suggest a method of polishing a substrate having a conductive material formed thereon that includes a retaining ring contact pressure that exceeds a membrane pressure by 0.4 psi and also has a ratio of retaining ring contact pressure to membrane pressure of more than 1.1:1, combined with a first linear relative velocity that is more than 600 mm per second and a second linear relative linear velocity that is less than 600 mm per second, and in combination with the other claim limitations.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 703-305-0168 (on or after 05 February 2004 this number will change to 571-272-1698). The examiner can normally be reached on M-F (8:00am to 4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940 (on or after 05 February 2004 this number will change to 571-272-1702). The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

SWS

Stephen W. Smoot
Patent Examiner
Art Unit 2813